

CLAIMS

1. Method for controlling a drivetrain (1) in a vehicle, in particular an off-road vehicle, with a drive engine (2), a multi-range transmission (4) and a drive output, the multi-range transmission (4) consisting at least of an automatic transmission (8) and a downstream range transfer box (9) that can be shifted by means of shift elements (24, 25), characterized in that when the transmission range of the range transfer box (9) is changed, a shift element (24 or 25) of the range transfer box (9) that is to be engaged is synchronized by controlling shift elements (A to E) of the automatic transmission (8).

2. Method according to claim 1, characterized in that when a transmission range of the range transfer box (9) is changed, the transmission ratio of the automatic transmission (8) is changed in such manner that the ratio change of the multi-range transmission (4) is smaller than if the range of the range transfer box (9) alone had been changed.

3. Method according to claims 1 or 2, characterized in that a range change takes place in the range transfer box (9) in response to a voluntary driver command.

4. Method according to any of claims 1 to 3, characterized in that before the range of the range transfer box (9) is changed, the load on the drivetrain (1) is relieved by changing a torque (m_{mot}) of the drive engine (2).

5. Method according to any of claims 1 to 4, characterized in that a rotation speed (n_{mot}) of the drive engine (2) is changed toward a connection speed (m_{mot_a}) of a ratio to be produced in the multi-range transmission (4), at which a shift element (24 or 25) of the range transfer box (9) to be engaged is synchronized.

6. Method according to claim 5, characterized in that the said connection speed (n_{mot_a}) of the drive engine (2) is determined as a function of the transmission ratio to be engaged in the multi-range transmission (4) and of a vehicle speed (v_{fzg}), so that when the connection speed (n_{mot_a}) is reached

an input speed on the engine side and an input speed of the shift element (24 or 25) of the range transfer box (9) to be engaged on the output side are equal.

7. Method according to claims 5 or 6, characterized in that the shift elements (A to E) of the automatic transmission (8) are actuated in such manner as to adjust the connection speed (n_{mot_a}) of the engine (2).

8. Method according to any of claims 5 to 7, characterized in that a transmitting capability of shift elements of the automatic transmission (8) is reduced in order to adjust the connection speed (n_{mot_a}) of the engine (2).

9. Method according to claim 8, characterized in that when the connection speed (n_{mot_a}) of the drive engine (2) is established, the transmitting capability of the shift elements of the automatic transmission (8) to be disengaged is removed, while shift elements of a ratio in the automatic transmission (8) to be engaged are operated in a slipping condition.

10. Method according to claim 9, characterized in that the shift elements of the automatic transmission (8) and of the range transfer box (9) to be engaged are closed when in a synchronized condition.

11. Method according to any of claims 1 to 10, characterized in that the change of range in the range transfer box (9) and the associated ratio change in the automatic transmission (8) are carried out when a voluntary driver command has been used.

12. Method according to any of claims 1 to 11, characterized in that the change of ratio in the range transfer box (9) and the associated ratio change in the automatic transmission (8) take place automatically when a defined operating condition exists.

13. Method according to any of claims 1 to 12, characterized in that the ratio change in the automatic transmission (8) is matched to the range change in the range transfer box (9) in such manner that essentially no change occurs in the transmission ratio of the multi-range transmission.